Cassini Saturn Arrival Timeline - 2004

Colors: yellow = maneuvers; blue = geometry; red = SOI-related; green = data playbacks

Orbiter UTC	Ground UTC	Pacific Time	Time wrt SOI	Activity	Description
135T18:40	May 14 20:00	Fri May 14 01:00 PM	SOI-47d07h	First tour sequence (S01) begins	36-day sequence includes Phoebe targeting maneuver, Phoebe flyby, and SOI targeting maneuver
143T16:53	May 22 18:14	Sat May 22 11:14 AM	SOI-39d08h	Main engine cover opens	Cover protecting main engin nozzles opens (retracts) for upcoming approach maneuver
145T19:34	May 24 20:55	Mon May 24 01:55 PM	SOI-37d06h	Open low pressure biprop valves	Prepare for upcoming maneuver by opening latch valves 20, 30
146T19:29	May 25 20:50	Tue May 25 01:50 PM	SOI-36d06h	Un-isolate oxidizer side of biprop system	Prepare for upcoming maneuver by firing pyro 25
148T22:22	May 27 23:43	Thu May 27 04:43 PM	SOI-34d03h	Final pressurization of biprop system	Open latch valve 10 two minutes before burn TCM-20 burn start
148T22:24	May 27 23:45	Thu May 27 04:45 PM	SOI-34d03h	Phoebe targeting maneuver burn start	Trajectory Correction Maneuver (TCM) 20; main engine maneuver, velocity change = 35 m/s (78 mph); 6 minute burn
163T19:33	Jun 11 20:56	Fri Jun 11 01:56 PM	SOI-19d06h	Phoebe flyby closest approach	Altitude = 2,000 km (1,240 miles), speed = 6.35 km/s (14,200 mph), phase angle = 25 deg
164T12:05	Jun 12 13:28	Sat Jun 12 06:28 AM	SOI-18d13h	Playback of Phoebe data begins	12-hour pass over Madrid and Goldstone to play back Phoebe closest approach data twice
165T07:52	Jun 13 09:15	Sun Jun 13 02:15 AM	SOI-17d17h	Load SOI critical sequence into RAM	Critical sequence is copied from the Solid State Recorders (SSRs) into spacecraft memory
168T21:07	Jun 16 22:30	Wed Jun 16 03:30 PM	SOI-14d04h	Saturn Orbit Insertion (SOI) targeting maneuver burn start	TCM-21; main engine maneuver, velocity change = 7 m/s (16 mph), 1 minute burn
171T21:52	Jun 19 23:15	Sat Jun 19 04:15 PM	SOI-11d03h	Second tour sequence (S02) begins	41-day sequence includes SOI, T0 flyby, SOI cleanup maneuver, and Solar Conjunction
173T20:52	Jun 21 22:15	Mon Jun 21 03:15 PM	SOI-09d04h	SOI contingency maneuver	TCM-22; placeholder for contingencies; not expected to be used
174T20:00	Jun 22 21:23	Tue Jun 22 02:23 PM	SOI-08d05h	Transition to thruster control	Reaction wheels are turned off and thrusters are enabled through end of SOI
175T00:00	**Jun 23 01:23**	**Tue Jun 22 06:23 PM**	**SOI-08d01h**	**Activate SOI critical sequence and begin quiet period**	**8-day period of minimal spacecraft activity begins; Solid State Recorders (SSRs) set to SOI configuration**
183T01:12	**Jul 01 02:36**	**Wed Jun 30 07:36 PM**	SOI-00h00m	**Saturn Orbit Insertion**	**Main engine maneuver, velocity change = 626 m/s (1400 mph); 96 minute burn**
183T03:07	Jul 01 04:31	Wed Jun 30 09:31 PM	SOI+01h55m	SOI complete; turn off Earth-line for post-burn science observations	Background sequence turns spacecraft to view rings and magnetosphere
183T05:36	Jul 01 07:00	Thu Jul 01 12:00 AM	SOI+04h24m	Spacecraft returns to Earth-point; SOI data playback begins	Double playback of SOI science & engineering data for 19.5 hours; data played back over Madrid, then Goldstone
184T09:30	Jul 02 10:54	Fri Jul 02 03:54 AM	SOI+01d08h	Closest approach to Titan	Distance = 339,000 km (205,000 miles), phase angle = 67 deg
184T17:51	Jul 02 19:15	Fri Jul 02 12:15 PM	SOI+01d17h	Titan playback starts	Playback of Titan-0 closest approach data
185T20:06	Jul 03 21:30	Sat Jul 03 02:30 PM	SOI+02d19h	SOI cleanup maneuver burn start	Orbital Trim Maneuver (OTM) 001, velocity change = 5 m/s (11 mph)
187T04:20	Jul 05 05:44	Sun Jul 04 10:44 PM	SOI+04d03h	Solar conjunction begins	Cassini is passing behind Sun as seen from Earth; Sun-Earth-Cassini angle = 3° (decreasing)
188T10:12	Jul 06 11:36	Tue Jul 06 04:36 AM	SOI+05d09h	Solar conjunction	Sun-Earth-Cassini angle = 2° (decreasing); no commanding or playback possible
193T07:11	Jul 11 08:35	Sun Jul 11 01:35 AM	SOI+10d06h	Solar conjunction	Sun-Earth-Cassini angle = 2° (increasing); commanding and playback resumes
194T12:51	Jul 12 14:15	Mon Jul 12 07:15 AM	SOI+11d12h	Solar conjunction ends	Cassini emerges from behind Sun as seen from Earth; Sun-Earth-Cassini angle = 3°
199T13:21	Jul 17 14:45	Sat Jul 17 07:45 AM	SOI+16d12h	Post-conjunction SOI cleanup maneuver burn start	OTM-001A, velocity change = 1 m/s (2 mph)
212T21:32	Jul 30 22:55	Fri Jul 30 03:55 PM	SOI+29d20h	End of background sequence	Next tour sequence S03 begins